

Technical Training Competency 1.1

Competency 1.1 Technical training personnel shall demonstrate a working level knowledge of the systematic approach to training process.

1. Supporting Knowledge and Skills

- a. State the five steps of the systematic approach to training process, and produce a basic sketch showing the relationship between the steps.
- b. Describe in general terms the activities that occur in each of the five steps of the systematic approach to training process, and list the products that may result from each of the steps.
- c. Describe the purpose and process for conducting needs analysis, job analysis, and task analysis.
- d. Describe the functional relationship between tasks, learning objectives, training materials, and trainee evaluations.
- e. State and describe the components of an internal training program evaluation process to assess the effectiveness of training.

2. Self-Study Activities (corresponding to the intent of the above competency)

Below are two web sites containing many of the references you may need.

Web Sites		
Organization	Site Location	Notes
Department of Energy	http://wastenot.inel.gov/cted/stdguido.html	DOE Standards, Guides, and Orders
U.S. House of Representatives	http://law.house.gov/cfr.htm	Searchable Code of Federal Regulations

Read pages 9 through 15 of DOE-STD-1077-94, U.S. Department of Energy Standard, *Training Accreditation Program Standard: Requirements and Guidelines*.

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Read pages xiii through xv, 1-7, 2-1, 3-1, 4-1, 5-1 through 5-4, and 5-6 through 5-9 of *The Occasional Trainer's Handbook*.

EXERCISE 1.1-A Sketch (on the reverse page) the major parts of the systematic approach to training.

EXERCISE 1.1-B Describe other systematic processes (that you or your facility use) which appear to be similar to the systematic approach to training.

EXERCISE 1.1-C Construct a simple matrix showing the phases of the systematic approach to training by the primary products or outputs from each phase.

Review pages 9 through 15 of DOE-STD-1077-94, U.S. Department of Energy Standard, *Training Accreditation Program Standard: Requirements and Guidelines*.

Scan pages 5 through 16 of DOE-HDBK-1078-94, U.S. Department of Energy Handbook, *Training Program Handbook: A Systematic Approach to Training*.

Read pages 1-1 through 1-7, 2-1, 3-1, 4-1, 5-1 through 5-4, and 5-6 through 5-9 of *The Occasional Trainer's Handbook*.

Read pages 43 through 47 of *Job Task Analysis: Guide to Good Practice*.

EXERCISE 1.1-D Describe how needs, job, and task analyses are important to the systematic approach to training process.

EXERCISE 1.1-E What are the functional relationships between/among the primary products of the phases of the systematic approach to training? (Hint: Lesson plans consist of learning objectives.)

Read paragraphs 2.7 pages 6 through 8, 3.3 pages 13 through 14, 3.4 pages 14 through 15, and 5.9 through 5.11 pages 26 through 29 of DOE-STD-1056-93, U.S. Department of Energy Standard, *Guide to Good Practices for Line and Training Manager Activities Related to Training*.

Read pages 5-1 through 5-4, and 5-6 through 5-9 of *The Occasional Trainer's Handbook*.

EXERCISE 1.1-F How is the evaluation phase (of the systematic approach to training process) the essential “glue” that keeps the process working?

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EXERCISE 1.1-G What are some training performance indicators that would be useful to a facility manager?

EXERCISE 1.1-H For these identified indicators, what data would you collect that could be used to measure each item? (Hint: Exam or evaluation scores may be one type of data.)

3. Summary

The following is a concise summary of each of the five phases of the systematic approach to training:

Analysis ensures training activities are oriented to job requirements by identifying the specific tasks involved in a given job. Training requirements are determined by analyzing the job and its component tasks. Organizational needs are also assessed to determine the resources required to support identified training requirements.

Design begins with developing terminal and enabling objectives based on information gathered from the analysis phase. Skills and knowledge associated with performing a task well are translated into enabling objectives. The objectives are then organized into instructional units and sequenced to aid the learning process. The objectives become the guides for the development of learning strategies, course content, and training materials. Additional design activities include identifying the appropriate training setting, developing test items and examinations (also done in the next phase), and documenting key components of this phase.

Development is the actual preparation of lesson plans, instructor guides, training aids, and training materials. Formulation of additional enabling objectives and revisions of test items and objectives may also occur. Both technical and instructional reviews of the products are conducted, and changes are made as necessary to ensure the content is both technically and educationally correct and relevant.

Implementation consists of resource allocation, planning, and scheduling, as well as the actual conduct of training. Resource allocation includes assigning instructors and support staff and scheduling training in facilities.

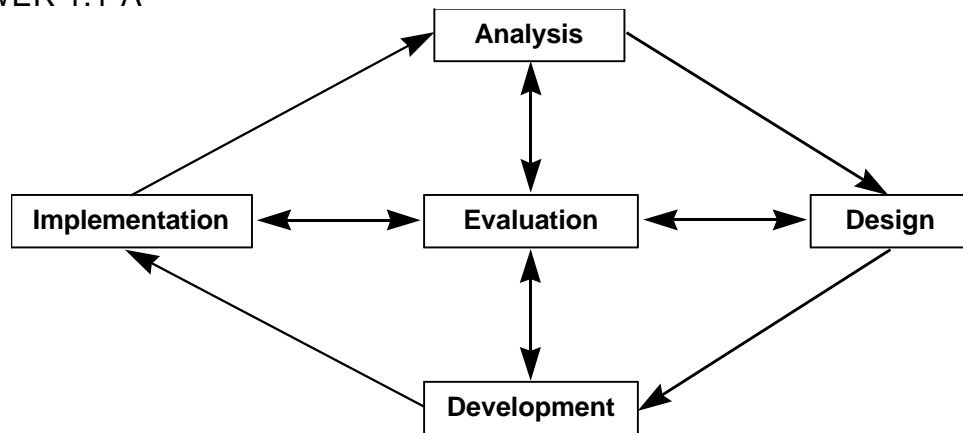
Evaluation is the critical feedback loop to ensure that the training meets its objectives. Feedback from instructors, trainees, evaluators, and supervisors is reviewed for its potential refinement of future training. Evaluation is a continuing action that occurs throughout the entire process and beyond. Evaluation results are translated into change actions or recommendations based on different criteria such as adequacy of content, tests, presentation, or documentation, and post-training job performance.

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4. Exercise Solutions

EXERCISE 1.1-A Sketch (on the reverse page) the major parts of the systematic approach to training.

ANSWER 1.1-A



EXERCISE 1.1-B What other systematic processes (that you or your facility use) appear to be similar to the systematic approach to training?

ANSWER 1.1-B Problem solving, root cause analysis, facility/equipment design change, and total quality management processes are examples of other systematic processes that may be used by a DOE facility.

EXERCISE 1.1-C Construct a simple matrix showing the phases of the systematic approach to training by the primary products or outputs from each phase.

ANSWER 1.1-C As examples:

Phase	Products
Analysis	<ul style="list-style-type: none">• Task list for a job or, for example, a new system or equipment• List of job task skills and knowledge• A determined or confirmed training need
Design	<ul style="list-style-type: none">• Learning and performance objectives, terminal and enabling objectives• Outline of instruction, including sequence, tentative settings, methods, and media to be used

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Phase	Products
Development	<ul style="list-style-type: none">• Lesson plans• Instructor guides• Trainee guides• Media materials and equipment• Piloting the training course/program
Implementation	<ul style="list-style-type: none">• Establishing or setting up the training setting• Instructor training• Instructor preparation and rehearsal• Conduct of the training• Training attendance sheets• Completed trainee examinations• Completed trainee feedback and comment forms
Evaluation	<ul style="list-style-type: none">• Trainee, instructor, and supervisor post-training feedback forms• Post-training testing results• Training program assessments and evaluations• Assessments of how well each phase of the systematic approach process is working

EXERCISE 1.1-D How are needs, job, and task analyses important to the systematic approach to training process?

ANSWER 1.1-D All three establish a “baseline” or foundation for the remaining phases. Needs analysis confirms that training is necessary, job analysis defines the major aspects of a job, and task analysis provides the job and task performance data and requirements, such as skills and knowledge required to perform a job, task, or duty area.

EXERCISE 1.1-E What are the functional relationships between/among the primary products of the phases of the systematic approach to training? (Hint: Lesson plans consist of learning objectives.)

ANSWER 1.1-E Tasks and associated skills and knowledge are translated into performance and learning objectives. The learning objectives in turn are used to create the course outline, which becomes the road map for the course developers in preparing lesson plans, test items and examinations, student materials, and training aids and equipment. This material is used by the trainers to conduct or

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present the training. All of this information is used to assess the effectiveness of the training program, which should be job- or performance-based as a result of the application of the systematic approach to training. The evaluation results, which become source data for the needs analysis process, are used to modify the training program.

EXERCISE 1.1-F How is the evaluation phase (of the systematic approach to training process) the essential “glue” that keeps the process working?

ANSWER 1.1-F There are checkpoints at the end of each phase, such that the output or product of each phase is reviewed for adequacy by the training organization and the client (or recipient) organization. Evaluation or feedback provides continual adjustments to the training process and the training program.

EXERCISE 1.1-G What are some training performance indicators that would be useful to a facility manager?

ANSWER 1.1-G The following are example indicators:

- Reductions in personnel errors
- Timely feedback from line management for improving training
- Timely incorporation of line and trainee feedback into the training
- Trainee examination scores and pass-fail rates

EXERCISE 1.1-H For these identified indicators, what data would you collect that could be used to measure each item? (Hint: Exam or evaluation scores may be one type of data.)

ANSWER 1.1-H The following are example data:

- Investigation results of incidents and near-misses
- Records of duration from the conclusion of training sessions to the receipt of feedback from the line
- Records of “turnaround” duration from the receipt of feedback to its actual incorporation into training program materials, media, or processes
- Trainee examination scores and compilation of pass-fail scores by program or course